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Customer No.: 07278

Docket No.: 06670/000M972-US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Michel Morin

Serial No.: 10/601,065

Filed: June 20, 2003

For: FIBER BRAGG GRATING INTERFEROMETERS FOR CHROMATIC  
DISPERSION COMPENSATION  
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September 25, 2003

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Information Disclosure Statement is submitted in accordance with  
37 C.F.R. 1.97, 1.98, and it is requested that the information set forth in this  
statement and in the listed documents be considered during the pendency of the  
above-identified application, and any other application relying on the filing date of  
the above-identified application or cross-referencing it as a related application.

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1. This IDS should be considered, in accordance with 37 C.F.R. 1.97, as it is filed: (Check one of the boxes A-D)

- ☐ A. Within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above-identified international application.
- ☒ B. before the mailing date of a first office action on the merits, or a first office action after filing a request for continued examination.
- ☐ C. after (A) and (B) above, but before the mailing date of a final rejection, a notice of allowance, or any other action that closes prosecution, and Applicants have made the necessary statement in box "i" below or paid the necessary fee in box "ii" below.

(check one of the boxes "i" and "ii" below:)

- ☐ i. Counsel states that, upon information and belief, each item of information listed herein was either (a) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or (b) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.
- ☐ ii. A check for the fee set forth in 1.17(p), presently believed to be \$180, is enclosed.
- ☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Counsel states that, upon information and belief, each item of information listed herein was either (i) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS; or (ii) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.
- ☐ i. A check for the fee set forth in 1.17 (p), presently believed to be \$180, is enclosed.

2. In accordance with 37 C.F.R. 1.98, this IDS includes a list (e.g., form PTO/SB/08) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. A copy of each document listed is attached, except as explained below.

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(check boxes A and/or B and fill in blanks, if appropriate.)

- ☐ A. Document(s) \_\_\_\_\_ is (are) deemed substantially cumulative to document(s) \_\_\_\_\_, and, in accordance with 1.98(c), only a copy of each of the latter documents is enclosed.
- ☐ B. Certain documents were previously cited by or submitted to the Office in the following prior applications, which are relied upon under 35 U.S.C. 120:

[SERIAL NO. & FILING DATE].

Applicant Identifies these documents by attaching hereto copies of the forms PTO-892 and PTO/SB08 from the files of the prior application(s) or a fresh PTO/SB/08 listing these documents, and request that they be considered and made of record in accordance with 1.98(d). Per 37 CFR 1.98(d), copies of these documents need not be filed in this application.

☐ 3. Document(s) \_\_\_\_\_ are not in the English language. In accordance with 1.98(c), Applicant states:

- ☐ An English translation of each document (or of the pertinent portions thereof), or a copy of each corresponding English-language patent or application is enclosed.
- ☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ is found in the attached search report (see MPEP § 609 A(3)x).
- ☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ is set forth as follows: [Insert concise explanation of relevance]
- ☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ can be found on page(s) \_\_\_\_\_ of the specification.
- ☐ A concise explanation of document(s) \_\_\_\_\_ can be found on the attached sheet.

☐ 4. No explanation of relevance is necessary for documents in the English language (see MPEP § 609 A(3)).

☐ 5. Other information being provided for the examiner's consideration follows:

6. In accordance with 37 C.F.R. 1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that

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information cited is, or is considered to be, material to patentability as defined in §1.56 (b), or that any cited document listed or attached is (or constitutes) prior art. Unless other-wise indicated, the date of publication indicated for an item is taken from the face of' the item and Applicant reserves the right to prove that the date of publication is in fact different.

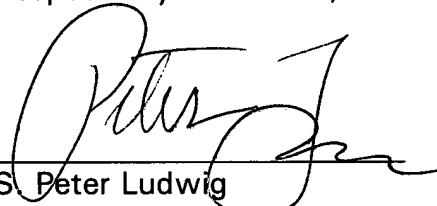
**CROSS REFERENCE UNDER 37 C.F.R. §1.78 TO RELATED APPLICATIONS**

Pursuant to 37 C.F.R. § 1.78, Applicant notes that the above-identified patent application may be related to the following U.S. Patent Applications:

(1) U.S. Patent Application Serial No \_\_\_\_\_, filed \_\_\_\_\_.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "S. Peter Ludwig", written over a horizontal line.

S. Peter Ludwig  
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Attorney for Applicant(s)

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Substitute for form 1449A/B/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				Application Number	10/601,065
				Filing Date	June 20, 2003
				First Named Inventor	Michel Morin
				Art Unit	N/A
				Examiner Name	Not Yet Assigned
Sheet	1	of	3	Attorney Docket Number	06670/000M972-USO

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
	AA	US-5,023,947-B1	06-11-1991	Cimini, Jr., et al.	
	AB	US-5,173,908-B1	12-22-1992	Negus et al.	
	AC	US-5,185,750-B1	02-09-1993	Kafka et al.	
	AD	US-5,212,698-B1	05-18-1993	Kafka et al.	
	AE	US-5,557,468-B1	09-17-1996	Ip	
	AF	US-6,081,379-B1	06-27-2000	Austin et al.	
	AG	US-6,154,318-B1	11-28-2000	Austin et al.	
	AH	US-6,222,673-B1	04-24-2001	Austin et al.	
	AI	US-6,289,151-B1	09-11-2001	Kazarinov et al.	
	AJ	US-6,487,342-B1	11-26-2002	Wu et al.	
	AK	US-6,519,065-B1	02-11-2003	Colbourne et al.	
	AL	US-2002/0044738-A1	04-18-2002	Jablonski et al.	
	AM	US-2002/0060865-A1	05-23-2002	Jablonski et al.	
	AN	US-2001/0021053-A1	09-13-2001	Colbourne et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)			
	BA	EP-1 098 211-A1	05-09-2001	JDS Uniphase Inc.	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		
✓	CA	G.P. Agrawal, "Nonlinear Fiber Optics", Second Edition (Academic Press, San Diego, 1995), pp. 6-13.		
	CB	G.P. Agrawal, "Fiber-Optics Communication System", Second Edition (John Wiley & Sons, Inc., New York 1997), pp. 38-466.		
✓	CC	C.K. Madsen, "Integrated waveguide allpass filters tunable dispersion compensators", OFC 2002, paper TuT1, pp. 131-132.		
✓	CD	D.J. Moss et al., "Multichannel tunable dispersion compensation using all-pass multicavity etalons", OFC 2002, paper TuT2, pp. 132-133.		
✓	CE	D.J. Moss et al., "Multichannel tunable dispersion compensation using all-pass multicavity etalons", Proc. SPIE TD01, 476-478 (2002).		
✓	CF	M. Tur, U. Levy and Y. Danziger, "Modules for chromatic dispersion and dispersion slope", OFC 2002, paper TuT4, pp. 135-136.		
✓	CG	M. Wandel, et al., "Dispersion compensating fibers for non-zero dispersion fibers", OFC 2002, paper WU1, pp. 327-329.		

Examiner Signature		Date Considered	
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Substitute for form 1449A/B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)				<b>Complete if Known</b>	
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				First Named Inventor	Michel Morin
				Art Unit	N/A
				Examiner Name	Not Yet Assigned
Sheet	2	of	3	Attorney Docket Number	06670/000M972-US0

CH	S. Matsuo et al., "New medium-dispersion fiber with large effective area and low dispersion slope", OFC 2002, paper WU2, pp. 329-330.	
CI	S.N. Knudsen, "Design and manufacture of dispersion compensating fibers and their performance in systems", OFC 2002, paper WU3, pp. 330-332.	
CJ	A. Walter and G. Schaefer, "Chromatic dispersion variations in ultra-long haul transmission systems arising from seasonal soil temperature variations", OFC 2002, paper WU4, pp. 332-333.	
CK	S. Ramachandran, "Higher-order-mode dispersion compensation for broadband dispersion and non-literarity management in transmission systems", OFC 2002, paper WU5, pp. 333-335.	
CL	J.E. Rothenberg, et al., "High-channel-count fiber Bragg gratings fabricated by phase-only sampling", OFC 2002, paper ThAA1, pp. 575-582.	
CM	T. Sugihara et al., "Automatically tracked dispersion compensation with penalty-free tunable dispersion equalizer for 40 Gbit/s systems" OFC 2002, paper ThAA2, pp. 577-578.	
CN	G.E. Kohnke et al., "Fiber Bragg gratings for dispersion compensation", OFC 2002, paper ThAA3, pp. 578-580.	
CO	Y. Painchard et al., "Multi-channel fiber Bragg gratings for dispersion and slope compensation", OFC 2002, paper ThAA5, pp. 581-582.	
CP	Y.W. Song et al., "Tunable dispersion slope compensation for WDM systems using a single non-channelized third-order-chirped FBG", OFC 2002, paper ThAA4, pp.580-581.	
CQ	R.L. Lachance et al., "Fiber Bragg gratings and chromatic dispersion", Proc. SPIE 4833, 1009-1016 (2002).	
CR	F. Gires and P. Tourniois, "Interferometre utilisable pour la compression d'impulsions lumineuses modulees en frequence", Coptes Rendus de l'Academie des Sciences de Paris 258, 6112-6115 (1964).	
CS	J.A. Giordmaine et al., "Compression of optical pulses", IEEE Journal of Quantum Electronics EQ-4, 252-255 (1968).	
CT	M.A. Duguay and J.W. Hansen, "Compression of pulses from a mode-locked He-Ne laser", Applied Physics Letters, 14, 14-16 (1969).	
CU	J. Heppner and J. Kuhl, "Intracavity chirp compensation in a cliding pulse mode-locked laser using thin-film interferometers", Applied Physics Letters 47, 453-455 (1985).	
CV	J. Kuhl and J. Heppner, "Compression of femtosecond optical pulses with dielectric multilayer interferometers" IEEE Transactions on quantum Electronics QE-22, 182-185 (1986).	
CW	K.D. Li et al., "Broadband cubic-phase compensation with resonant Gires-Tourniois interferometers", Optics Letters 14, 450-452 (1989).	
CX	L.J. Cimini et al., "Optical equalization for high-bit-rate fiber-optic communications", IEEE Photonics Technology Letters, 2, 200-202 (1990).	
CY	L.J. Cimini, et al., "Optical equalization to combat the effects of laser chirp and fiber dispersion" Journal of Lightwave Technology, 8, 649-659 (1990).	
CZ	A.H. Gnauck et al., "Optical equalization of fiber chromatic dispersion in a 5-Gb/s transmission system" IEEE Photonics Technology Letters, 2, 585-587 (1990).	
CA1	A.H. Gnauck et al., "8-Gb/s-130 km transmission experiment using Er-doped fiber preamplifier and optical dispersion equalization", IEEE Transactions Photonics Technology Letters 3, 1147-1149 (1991).	
CB1	S. Dilwali and G. Soundra Pandian, "Pulse response of a fiber dispersion equalizing scheme based on an optical resonator" IEEE Photonics Technology Letters 4, 942-944 (1992).	
CC1	F. Ouellette et al., "All-fiber devices for chromatic dispersion compensation based on chirped distributed resonant coupling", Journal of Lightwave Technology, 12, 1728-1738 (1994).	
CD1	C.K. Madsen and G. Lenz, "Optical all-pass filters for phase response design with applications for dispersion compensation", IEEE Photonics Technology Letters, 10, 994-996 (1998).	
CE1	G. Lenz and C.K. Madsen, "General optical all-pass filter structures for dispersion control in	

Examiner Signature	Date Considered
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PTO/SB/08a/b (08-03)

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				Examiner Name	Not Yet Assigned
				Attorney Docket Number	06670/000M972-USO
Sheet	3	of	3		

		WDM systems" Journal of Lightwave Technology, 17, 1248-1254 (1999).	
CF1	C.K. Madsen et al.	"An all-pass filter dispersion compensator using planar waveguide ring resonators", OFC/IOOC, 1999, paper FE-6.	
CG1	C.K. Madsen et al.	"Multistage dispersion compensator using ring resonators", Optics Letters 24, 1555-1557 (1999).	
CH1	C.K. Madsen	"Tunable dispersion compensators based on optical allpass filters", in IEEE LEOS Newsletter (2001), pp. 20-21.	
CI1	E.M. Doeling and D.K. MacFarlane	"Lightwave lattice filters for optically multiplexed communication systems", Journal of Lightwave Technology 12, 471-486 (1994).	
CJ1	K. Jinguji	"Synthesis of coherent two-port optical delay-line circuit with ring waveguides", Journal of Lightwave Technology 14, 1882-1898 (1996).	
CK1	C.K. Madsen et al.	"Integrated all-pass filters for tunable dispersion and dispersion slope compensation", IEEE Photonics Technology Letters 11, 1623-1635 (1999).	
CL1	F. Horst et al.	"Tunable ring resonator dispersion compensators realized in high-refractive-index contrast SiON technology", ECOC 2000, post-deadline papers.	
CM1	C.K. Madsen et al.	"A tunable dispersion compensating MEMS all-pass filter" IEEE Photonics Technology Letters 12, 651-653 (2000).	
CN1	C.K. Madsen et al.	"Compact integrated tunable chromatic dispersion compensator with a 4000 ps/nm tuning range", OFC 2001, paper PD9.	
CO1	C.K. Madsen et al.	"A tunable dispersion compensating MARS all-pass filter", ECOC '99 Vol. II, 20-21 (1999).	
CP1	M. Jablonski et al.	"Design of allpass filters for third order dispersion compensation", ECIC '99, Vol. I, 316-317 (1999).	
CQ1	M. Jablonski et al.	"Adjustable coupled two-cavity allpass filter for dispersion slope compensation of optical fibres", Electronics Letters 36, 511-512 (2000).	
CR1	M. Jablonski et al.	"Layered optical thin-film allpass dispersion equalizer (LOTADE): a novel device compensating for dispersion slope of optical fibers", CLEO 2000 paper CPD16.	
CS1	M. Jablonski et al.	"Layered optical thin-film allpass dispersion equaliser for compensation of dispersion slope of optical fibers", Electronics Letters 36, 1139-1141 (2000).	
CT1	M. Jablonski et al.	"Adjustable dispersion-slope compensator using entirely thin-film coupled-cavity allpass filters in a multi-reflection parallel configuration", OFC 2001, paper TuS3.	
CU1	M. Jablonski et al.	"The realization of all-pass filters for third-order dispersion compensation in ultrafast optical fiber transmission systems", Journal of Lightwave Technology 19, 1194-1205 (2001).	
CV1	M. Jablonski et al.	"Entire thin-film allpass coupled-cavity filters in a parallel configuration for adjustable dispersion-slope compensation" IEEE Photonics Technology Letters 13, 1188-1190 (2001).	
CW1	R. Kashyap	"Fiber Bragg Gratings, Fundamentals and Applications in Telecommunications and Sensing (Artech House, Boston 1999).	
CX1	A. Othonos and K. Kalli	"Fiber Bragg Gratings. Fundamentals and Applications in Telecommunications and Sensing" (Artech House, Boston 1999).	
CY1	W.W. Morey et al.	"Fiber Fabry-Perot interferometer using side exposed fiber Bragg gratings", OFC '92, paper WA2.	
CZ1	G.E. Town et al.	"Wide-band Fabry-Perot-like filters in optical fiber", IEEE Photonics Technology Letters 7m 78-80 (1995).	
CA2	S. Doucet et al.	"High-finesse large band Fabry-Perot fibre filter with superimposed chirped Bragg gratings", Electronics Letters 38, 402-403 (2002).	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Examiner Signature		Date Considered	
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